



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,269	12/03/2003	Hideaki Nagakubo	9281-4729	4828
7590 04/19/2005 Brinks Hofer Gilson & Lione P.O. Box 10395 Chicago, IL 60610			EXAMINER TSIDULKO, MARK	
			ART UNIT 2875	PAPER NUMBER

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/727,269

Applicant(s)

NAGAKUBO ET AL.

Examiner

Mark Tsidulko

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 020205.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

The submission of preliminary amendment filed on 12/03/2003 is acknowledged. At this point claims 1-4 and 8-11 have been amended and the remaining claims left unchanged. Thus, claims 1-12 are at issue in the instant application.

### *Claim Objections*

Claims 1, 8 are objected to because of the following informalities:

Referring to Claim 1 it is unclear what Applicant intends by "...introducing light components **from** the light source **from** an incident surface...".

Also, two different names ("**incident surface**" and "**end surface**", see specification, page 15, lines 4 and 5) are used for the surface 12a, therefore the phrase "**incident surface** provided on an **end surface**" should be changed, because the surface can not be provided on itself.

Referring to Claim 8 the phrase "tips of the pyramid-shaped bodies are directed to a direction opposite **to that to the** light guide plate" should be changed to the phrase "tips of the pyramid-shaped bodies are directed opposite the light guide plate".

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2875

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what Applicant intends by “**another surface** of the light guide plate”. Also, it is unclear what Applicant intends by “reflector **having** micro-irregularities **having** light reflectivity formed on a base surface...” Base surface of what? If it is base surface of the diffusive reflector [15], the drawing (Fig.3) shows that the micro-irregularities [15d] are located on the top surface of the reflector [15a].

The form and phraseology used in claim make claim indefinite and embarrassed for understanding. Appropriate correction is required.

The status of Claim 7 (i.e. if allowable or not) can not be determined because of the vagueness of the claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Futhey et al. (US 6,612,723).

Futhey et al. disclose (Figs. 1, 2, 4) a light source [12], a light guide [14] having a incident surface (not indicated by number), an emitting surface [15], wherein the emitting

Art Unit: 2875

surface has a plurality of wedge-shaped grooves [22] arranged parallel to the incident surface of the light guide and micro-protrusions [16] formed between the grooves [22] and having extended direction parallel to the incident surface (see Fig.4).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futhey et al. (US 6,612,723) in view of Parikka (US 6,592,233).

Futhey et al. discloses the instant claimed invention except for that the distance between adjacent grooves varies in accordance with a distance from the light source and a brightness distribution.

Parikka discloses a lighting device including a light guide plate [20] having a plurality of wedge-shaped grooves wherein intervals between grooves are decreased with increasing a distance between the groove and a light source (col.4, lines 52-67; col.5, lines 1-8) in order to reduce uneven illumination effect.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the distance between adjacent grooves varies in accordance with a distance from the light source and a brightness distribution, as taught by Parikka, for the light guide of Futhey et al. in order to reduce uneven illumination effect.

Art Unit: 2875

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Futhey et al. and Parikka as applied to claim 4 above, and further in view of Mizutani et al. (US 6,761,461).

Futhey et al. discloses the instant claimed invention except for that the depth of the grooves far from the light source is deeper than that of the grooves close to the light source.

Mizutani et al. disclose a light guide wherein the depth of the grooves far from the light source is deeper than that of the grooves close to the light source in order to ensure uniform emission all over the light guide plate (col.2, lines 47-51).

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the depth of the grooves far from the light source is deeper than that of the grooves close to the light source, as taught by Mizutani et al. for the guide light plate of Futhey et al., in order to ensure uniform emission all over the light guide plate.

Claims 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futhey et al. (US 6,612,723) in view of Suzuki et al. (US 5,600,462).

Futhey et al. discloses the instant claimed invention except for light directivity adjusting sheet having a pyramid-shaped prisms and a liquid crystal display.

Suzuki et al. disclose (Figs.3, 5, 14) a LCD [1], a prism plate [9] that has a plurality of pyramid-shaped prisms formed on a base body, located on a top of the light guide plate. Tips of the pyramid-shaped prisms are directed opposite the light guide plate. Since each pyramid has four sides, it is understood that the light is transmitted in the four directions. Plate also has a micro-irregularities [10] faced to the light guide plate [8]. This structure allows to increase a light diffusivity of the plate.

Art Unit: 2875

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the light guide of Futhey et al. with prism plate of Suzuki et al., in order to increase a light diffusivity.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Futhey et al. (US 6,612,723) in view of Konishi et al. (US 6,835,440).

Futhey et al. discloses the instant claimed invention except for that the thickness of the light guide plate is decreasing with increasing a distance from the light source.

Konishi et al. disclose (Fig. 1A) a light guide plate [100] wherein its thickness becomes gradually thinner from the light source for the purpose of reduction of the homogeneity of the light emitted due to luminance unevenness (col.2 lines 3-7).

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the light guide of Futhey et al. having a thickness becomes gradually thinner from the light source for the purpose of reduction of the homogeneity of the light emitted due to luminance unevenness.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Futhey et al. (US 6,612,723) in view of Sasagawa et al. (US 6,636,283).

Futhey et al. discloses the instant claimed invention except for a middle light guide body arranged along an incident surface of the light guide plate and a point light sources.

Art Unit: 2875

Sasagawa et al. disclose (Fig.1) a LCD device having an optical light guide [2] arranged along incident surface of the main light guide [1] and two LEDs arranged at the end sides of the light guide [2].

It is well known in the art that the LED has a long service life and short response times, the power consumption of a LED is significantly lower than of a fluorescent lamp, LED illumination sources are energy efficient and have a longer operating lifetime compared to fluorescent lamps.

It would have been obvious to one having ordinary skill in the art, at the time the invention was made, to provide the middle light guide body arranged along an incident surface of the light guide plate and the LEDs arranged at the end sides of the a middle light guide body, as taught by Sasagawa et al., for the device of Futhey et al. in order to save electrical power and obtain a longer operating lifetime of the device.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Tsidulko whose telephone number is (571)272-2384. The examiner can normally be reached on 8 - 5.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for all communications.



Art Unit: 2875

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.T.  
February 2, 2005



**JOHN ANTHONY WARD**  
**PRIMARY EXAMINER**